A RISK MANAGEMENT PUBLICATION

LESSONS LEARNED

NATIONAL PARK SERVICE

November 2001

Number 4

Date: October 6,1996

Place: C&O Canal NHP

Employee Job Title:Maintenance Worker

Size of Crew: 3 NPS workers and two contractors

BRIEF DESCRIPTION OF ACCIDENT:

A maintenance crew began to cut down a large mulberry tree with twin trunks leaning out over the towpath. The upper section of the tree was cut, leaving an 8-foot free-standing twin-trunk tree stub, with one side 4-feet high, and the other side 8-feet high. The employee, using a chain saw with a 16-inch bar, made an initial cut on the 4-foot section, cutting down towards the towpath in a counterclockwise direction, then began making a similar cut on the 8-foot section. Since he was unable to make an entire cut around the tree from the uphill side, he moved to a position 12 to 18 inches below the base of the stump, and repositioned himself under the 8-foot leaning section. As he began sawing, the 8-foot section stump broke free from the 4-foot twin section and fell, having been completely cut through, striking and fatally injuring the employee.

CONTRIBUTING FACTORS:

1. Inadequate Knowledge and Skill of Employees. No park employees were qualified tree workers or certified arborists. They failed to identify and take precautions regarding this type of tree—a mulberry, a species with heavy dense wood, that commonly has a twin/co-dominant stemmed trunk. Proper technique such as sectioning the tree stump or using a binding chain should have been used.

2. Lack of Personal Protective Equipment (PPE). None of the NPS employees were wearing hardhats, chain saw chaps, and hearing and/or eye protection. Also, employees had been told to wear PPE,but there did not appear to be any enforcement of those verbal instructions.

3. Inadequate Equipment. Had a saw with a 28-inch bar been available, the tree could have been cut from above. There was not other essential equipment available, including a binding chain, or felling wedges. A bucket truck could have been utilized to limb and top, taking the tree down in several sections.

4. Inadequate project management. There was a sense of urgency to get the trees cut as quickly as possible, so they would be out of the way of another contractor who was bringing equipment in the next day to de-silt the canal.

5. Fatigue. It is not certain that fatigue was a factor, but the employee had worked 29 of the 31 days prior to the accident.

6. There were no written SOPs.

RECOMMENDATIONS FOR SERVICEWIDE CONSIDERATION:

1. Management should ensure that all employees whose duties require the use of chain saws and the felling of trees are properly trained, and written SOPs are developed. A group of employees should be trained to a higher skill level to form a "tree crew," or contract this type of work out, or request tree crews from other parks.

2. Work projects to be expedited should receive increased planning, supervision, and resources so employees do not have to work extra hours or take shortcuts.

3. Management should provide safe and proper PPE, and enforce the use of PPE, proper tools and equipment and safe work practices through a system of accountability and rewards.

4. Management should develop a "Work-Rest" SOP to prevent continued work, leading to fatigue and increased accident potential.

(All information taken from Board of Inquiry Report,December, 1996)